



## COVER SHEET

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# ENHANCING CONSTRUCTION EDUCATION IN INDONESIA THROUGH LINKS WITH INTERNATIONAL INSTITUTIONS

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## Abstract

The construction sector is particularly important to any national economy as it provides the infrastructure needed for many other sectors of the economy. In Indonesia, a developing country, contribution of the construction sector to the GDP increased from 4% in 1973 to 7% in 1994. This increase, however, is still relatively low compared to many of those in the developed countries which are typically greater than 9%. One factor, which could contribute to the relatively low contribution to the GDP, is a lack of adequate human resources in terms of quantity and quality when managing construction projects. The education and training of construction personnel in Indonesia is still far from adequate in providing the needed professionalism to manage major construction projects. Contributing to this inadequate training is a lack of university teaching professionals in the construction field. To fulfil the educational demand of construction professionals in Indonesia, an education and training scheme significantly different to the current system is required. One such scheme relies on the development of academic and research linkages with education institutions in developed countries.

This paper will present several alternative programs that have been developed or are currently being investigated for construction education in Indonesia. This paper highlights the particularly successful Master of Construction Management degree at the University of Indonesia – a program which utilises imported expertise from the School of Construction Management and Property, Queensland University of Technology, Australia.

**Keywords:** construction, construction management, developing countries, education, training, internationalisation.

## 1. Introduction

The construction sector is important to any national economy as it builds and provides infrastructures necessary for many other sectors of the economy. In developing countries in the Asian region, the contribution of the construction sector to the GDP varies from 3% to 8%. In Indonesia, the construction sector's contribution to the GDP

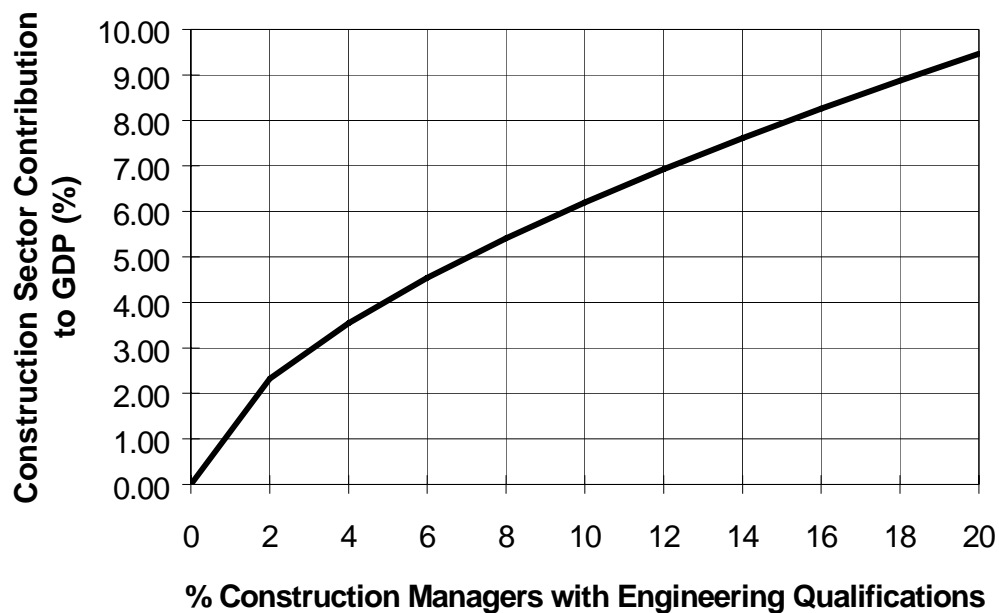
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increased from 4% in 1973 to 7% in 1994. This increase, however, is still relatively low compared to those in developed countries that are typically greater than 9%

One factor, which could influence the relatively low sector contribution to the GDP, is a lack of adequate human resources in terms of quantity and quality when managing construction projects. Typically, graduates from engineering disciplines have filled management positions in the Indonesian construction industry. A study by Trigunarsyah and Abidin [1] shows a positive correlation between construction personnel with engineering qualifications and the construction sector contribution to the GDP (Figure 1).



**Figure 1 Correlation between Qualification and Contribution to GDP**

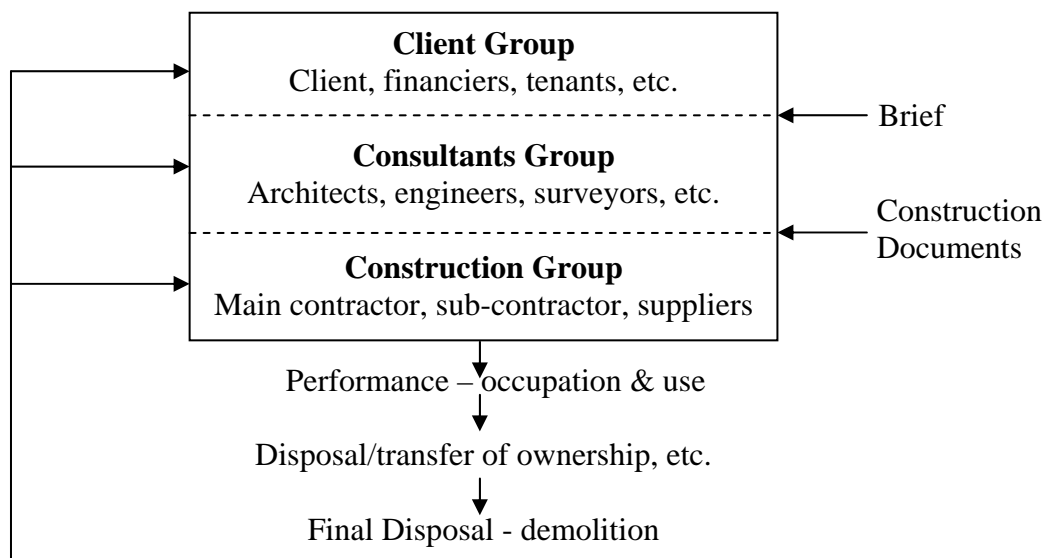
In many countries neighbouring Indonesia and in other developed countries, professionals graduated specifically with construction management qualifications typically manage the construction industry. In Indonesia, several universities including the University of Indonesia have introduced postgraduate programs in construction management. A lack of university teaching professionals in this field, however, is the main constraint faced by the University of Indonesia in organising such programs. To bridge the shortfall of construction management teachers, academic and research linkages with education institutions in developing countries are being developed. One of the links that has been developed for the Graduate Program in Construction Management, at the University of Indonesia is with School of Construction Management and Property, Queensland University of Technology, Australia.

## **2. The demand for construction management**

The construction process is often a long process involving many parties, usually consisting of:

- *Owner or client:* which can be government agencies for public works, private companies and individuals. They are usually responsible for the conception of a construction project.
- *Designers:* such as architects and engineering consultants, providing the design input and construction supervision of the project.
- *Contractor:* as a general contractor or specialised contractor. Their success and failure depends on a combination of technological and managerial skills involving the management of people, plant, materials, quality of products, money and time. Construction, such as building construction, is one of the most complicated in terms of management and technology because it involves many specialised contractors who work in limited space and time.
- *Government:* affects the construction as both regulator of the sector and possibly client. The Government role is important with respect to contribution of the construction sector to the GDP, investment and employment. By providing effective and efficient regulation, the government can affect economic conditions and maintain the required standards.
- *Industry Associations:* play a significant role in terms of monitoring self-regulation, maintenance of quality standards set for the industry and ensuring that the needed construction resources including human skill are available to meet demand. Often they will guide universities in course content through accreditation requirements.

Figure 2 shows the overview of construction and main grouping of human resources (Langford et. al. [2]).



**Figure 2 Overview of the Provision of Construction**

One of the key factors influencing the success of construction projects is the quality of the construction personnel, specially the construction manager. A study into the

influence of the quality of the construction manager in improving high-rise construction project performance in the greater Jakarta-Bogor-Tangerang-Bekasi (Jabotabek) area by Swastika [3] shows that the quality of the construction project manager in terms of qualification and competency is positively correlated with the improved performance of the construction projects. Four variables, namely competency in controlling project cost; competency in controlling equipment, materials & labour; competency in choosing the optimum method of construction; and professional training have been proven to strongly influence project performance.

### **3. Construction management education and training at the University of Indonesia**

The objectives of construction management education and training at the Faculty of Engineering, the University of Indonesia are:

- to identify the level and quality of human resources that should be supplied to improve the performance of the Indonesian construction industry;
- to develop a conducive environment at the Faculty of Engineering by utilising the available resources within the Faculty and the University and instigating alliances with quality overseas higher education institutions to improving the University of Indonesia's capability and quality in conducting construction management education and training.

Professional training in construction management at the Faculty of Engineering has been conducted for the last ten years. The program is jointly organised with the University of Indonesia, the Indonesian Association of Construction Management Professionals (HAMKI) and several construction companies. This training has been very useful in fulfilling the short-term demand for construction management personnel. However, higher education in construction management is needed in response to the increasing demand for better quality construction human resources.

The Graduate Program in Construction Management at the Faculty of Engineering, University of Indonesia commenced in 1993. It is a 4 semester program with 3 semester of coursework and 1 semester for research and thesis preparation. As there are limited numbers of teaching professionals in this field within the University, several lecturers are drawn from the construction industry itself. To further strengthen the program, a collaboration with an overseas institution – School of Construction Management and Property, Queensland University of Technology – using visiting lecturers has been undertaken, especially in the construction technology component of the course. The short-term objective of this scheme is to enhance several courses in the construction management program. The long-term objective is to continually improve the program and undertake joint research between the two institutions in areas such as construction and construction education.

### **4. Academic and research links to improve construction management education**

Presently at an early stage of development, it is difficult for the Graduate Program in Construction Management at the University of Indonesia to rely only on resources

available within the university and in the national construction industry. Limited numbers of professionals and limited experience in construction education, particularly when combined with the internationalisation challenge requires expertise from overseas institutions with appropriate experience.

Further to the visiting lecturer program, other programs in collaboration with the School of Construction Management and Property, Queensland University of Technology are being investigated:

- Curriculum review: A study conducted by academics from the Faculty of Engineering, University of Indonesia, in 1996 aimed at improving the relevance of higher education in the field of construction management indicated that the curriculum of construction management courses at several universities in Australia, Hong Kong and United States varied depending on mission, objective and the strength of each university. Further evaluation of the existing curriculum at the University of Indonesia will be conducted with the assistance of the School of Construction Management and Property, Queensland University of Technology.
- Exchange Program: This program is intended to give international exposure to the staff of the Graduate Program in Construction Management, University of Indonesia through visiting lecturer and/or researcher programs to the School of Construction Management and Property, Queensland University of Technology. As for the graduate students, visiting lecturers from the School of Construction Management and Property, Queensland University of Technology will give valuable insights into international construction as well as new construction technology and management practices.
- Joint Research: Joint research programs to be conducted at the University of Indonesia and Queensland University of Technology are being investigated. Through this program it is expected that a joint research centre or an Institute for Construction Industry will be developed in Indonesia – further enhancing construction research at the University of Indonesia in particular and in Indonesia in general. In the early stage the research, is likely to be undertaken by graduate students in the preparation of their thesis. In the later stages, PhD research can be undertaken through the construction management program at the University of Indonesia with co-supervision provided by the School of Construction Management and Property, Queensland University of Technology. It is envisaged that the research centre will become a centre for excellence in construction in Indonesia.

## **5. Conclusion**

The construction industry is important for any national economy. To improve the performance of the construction industry in Indonesia and its contribution to the GDP, construction education has to be well planned and organised. Professional training provides a short-term solution for the shortage of construction management personnel. However, higher education in construction management is needed to strengthen the construction industry; improve its performance nationally; and make it more competitive internationally.

Higher education in construction management is relatively new in Indonesia. Limited resources is the main constraint for this program. By establishing a link with

an overseas institution such as the School of Construction Management and Property, Queensland University of Technology this constraint can be reduced or even eliminated. Further, such collaboration provides opportunities to develop other programs such as scholar exchanges and joint research. It can then be used as the foundation to establish a centre for construction industry at the University of Indonesia.

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